

Kluwer Arbitration Blog

Arbitration Tech Toolbox: Cross Examination? There's an App for That

Robert Bradshaw (LALIVE) · Monday, February 6th, 2023

Now more than ever, technology is an integral part of hearings. Cross-examination of witnesses by videolink and streaming to remote participants are now commonly accepted; real-time transcription has become the norm wherever budget allows; and electronic presentation of evidence (EPE) is frequently used in cross-examinations. These technologies have changed the way in which we present evidence – but technology also promises to change the way in which evidence is tested and evaluated.

Most of the time at hearings is devoted to witness testimony, as cross-examination allows the parties to tease out inconsistencies or gaps in testimony and test it against the documentary evidence. But whilst historically it has been left to the skill of the advocate and the judgement of the tribunal to discern whether a witness is reliable, counsel and arbitrators could soon draw on technological assistance.

The search for a new generation of “lie detectors”

Throughout human history, societies have appealed to various techniques or devices to test whether an individual is lying – the polygraph being the most famous example. Whilst polygraph evidence has, by and large, gained little traction in legal proceedings, a multitude of researchers and start-ups are competing to develop a new generation of “lie-detecting” technologies using advances in artificial intelligence (AI) and facial scanning technology.

Take, for example, the work of [Yael Hanein and Dino Levy](#) at the University of Tel Aviv. Professors Hanein and Levy say that their software can detect lies via involuntary and normally imperceptible movements in facial muscles, such as the slight raising of the eyebrows or pursing of the lips. They claim a 73% accuracy rate in detecting lies, compared to an [average accuracy rate among humans of around 54%](#) (that is, scarcely better than chance). Currently, subjects must wear electrodes to detect movements in their facial muscles – hardly comfortable for a witness on the stand. But the developers hope that “electrodes will eventually be replaced by video cameras and software able to spot a liar from a distance or even via an internet link”.

Other developers have already taken this step, launching technologies that require only a webcam or smartphone. [Valid.it](#) is an application developed by ex-agents of the Israeli security services.

Anyone can download the app and, using a mobile phone camera and microphone, record the subject answering questions. For US\$ 29 per test, Valid.it will analyse the subject's facial expressions and eye movements to provide a score reflecting the likelihood that he or she is telling the truth.

Valid.it, which [claims](#) to have had significant interest from employers looking to screen job applicants and from the insurance industry in weeding out fraudulent claims, joins a host of other next-generation "lie detectors". The US-based EyeDetect, for example, relies on monitoring pupil dilation and eye movements. Others claim to use [voice stress analysis](#) or [transdermal optical imaging](#) (detecting blood flows around the face) to similar effect. All these technologies boast accuracy rates of 85% or higher – that is, at least as high as the accuracy usually quoted for the traditional polygraph. They are, however, fully automated, without the need for a trained examiner, and are not nearly as cumbersome.

"Lie detectors" in the hearing room

Lie-detecting software is already being used by law enforcement and employers in some jurisdictions. Controversially, EU States have also trialled automated software – [iBorderCtrl](#) – at borders to screen travellers for deception and other suspicious behaviours. [As has been discussed elsewhere](#), the use of these "lie detectors" in cross-examining witnesses is likely to be even more controversial.

First and foremost, parties and tribunals are likely to have concerns over the technologies' reliability: namely, whether the claimed accuracy rates, typically based on tests under controlled conditions, will translate into the real world. Beyond questions regarding accuracy, tribunals will need to consider whether the use of such technology is compatible with the witness's privacy and privilege against self-incrimination, having regard to the law of the seat. For this reason, it is doubtful whether tribunals would permit the use of "lie-detecting" programmes over the objections of the witness being cross-examined. Lastly, the risk of machine bias should not be overlooked. In October 2022, the UK's Deputy Information Commissioner [warned](#) against the use of "half baked" biometric technologies designed to detect individuals' emotional states, with his office cautioning that such technologies bore a risk of "[systemic bias](#)". The EU, in its [draft regulation on AI](#), also lists "the use of polygraphs and similar tools" by law enforcement and border agencies as "high-risk" systems subject to heightened scrutiny.

The Court of Arbitration for Sport (CAS) has admitted polygraph evidence in several cases where an athlete was accused of doping violations and volunteered to take a polygraph test as proof of his or her innocence. Nevertheless, even in those cases where they found the evidence to be admissible, CAS tribunals appear to have placed little weight on such evidence. The US middle-distance runner Shelby Houlihan is the latest athlete to rely on polygraph evidence without success. Houlihan, who tested positive for the prohibited substance nandrolone, argued that she must have unwittingly consumed the drug in a tainted burrito and "passed" a polygraph test proclaiming her innocence. In a [decision](#) dated 27 August 2021, a CAS tribunal admitted the evidence but considered the questions posed by the polygraph examiner to have been poorly phrased. Ultimately, the tribunal was unconvinced by Houlihan's explanation and banned her for four years.

Though sports tribunals may have attached limited weight to polygraphs, that fact has not stopped

athletes from seeking to rely on polygraph evidence. As new forms of “lie detectors” offer greater convenience and lower cost than the traditional polygraph, we may see more efforts to use these technologies in other fields of arbitration. Even if tribunals are reluctant to admit “lie detector” results as evidence, parties might still use these programmes for tactical advantage. As it is now common to stream hearings to remote participants, one can imagine a situation where one party feeds the video of a cross-examination to an application like Valid.it or EyeDetect – the aim being to pick up on non-verbal cues of deception or stress in the witness’s answers and highlight to counsel where to push harder. Tribunals could consider including a rule in their procedural orders restricting the permissible use of video recordings, particularly as “lie-detecting” technologies proliferate.

Automated fact-checking in cross-examination

The “lie-detecting” programmes discussed above all analyse the *manner* in which witnesses testify. But can AI play a different role – by fact-checking the *content* of the witness’s testimony?

As noted in a previous [blog](#), machine learning tools are already used in document review to identify documents for relevance. Checking factual claims for veracity – whether in submissions or testimony – raises its own technical challenges. But using AI as a fact-checker is already a reality.

A team at Duke University, led by the creator of the fact-checking website PolitiFact, [has recently developed “Squash”](#). Squash is a real-time automated fact-checker. Play it a video of a politician in a speech or debate and, using speech recognition, it will compare the politician’s statements to a database of previously verified statements and display an instant fact-check onscreen. Meanwhile, the UK fact-checker FullFact is developing automated tools to check statistics in news stories or political campaigns against official sources. Its project won the 2019 Google AI Impact Challenge.

Automated fact-checking software has already been implemented on social media platforms. Since 2020, Meta has [used machine learning software to automatically flag misinformation](#) on Facebook, *e.g.*, on the coronavirus pandemic and during the US presidential elections. Its latest project is an AI tool to [cite-check Wikipedia](#), verifying articles against the sources cited and suggesting corrections.

Similar tools could provide automated cite-checking of briefs as well as real-time fact-checking at the hearing. Witness testimony is already routinely recorded and transcribed. Soon, it may be possible to run AI tools on the real-time transcript; if a witness refers to an email or letter in his or her answer, for example, it can cross-check the record and provide counsel with the relevant exhibit reference. Furthermore, an automated fact-checker could verify whether a witness’s answer contradicts other evidence on the record or other parts of his or her testimony and alert counsel to the inconsistency.

We are very far from the day when AI will replace lawyers in cross-examination, if that day ever arrives – but we are approaching a point at which AI can assist lawyers and supplement their work. Readers might be familiar with [ChatGPT](#), a form of AI known as a large language model recently, which can answer technical questions and even generate poetry. It’s an impressive illustration of how far AI has come. Ask ChatGPT “How can a robot assist a lawyer in cross-examination?” and it replies:

“There are several ways a robot could assist a lawyer during cross-examination. For example, a robot could be programmed to quickly search through vast amounts of legal documents and evidence to help the lawyer find relevant information. A robot could also be used to analyze the body language and speech patterns of witnesses to help the lawyer identify inconsistencies in their testimony. Additionally, a robot could be used to help the lawyer keep track of time during the cross-examination, ensuring that they do not go over the allocated time limit.”

Ask ChatGPT to expand on that answer and it will provide further detail. It can even suggest cross-examination questions (of variable quality, it should be noted).

Practitioners could use similar natural language processing (NLP) systems when preparing cross-examinations – to check factual points against the evidentiary record, for example, or generate a chronological narrative – and during the cross-examination itself, to verify a witness’s statements. In sum, the role played by technology in the hearing room continues to grow – and AI-powered applications may be the next step.

Further posts on our Arbitration Tech Toolbox series can be found [here](#).

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